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(54) Title of the invention: Electronic program guide information display device

(57) Abstract:
Problem to be solved: To obtain an electronic program guide information display device that can display only electronic program guide information of receptible channels among received electronic program guide information sets.
Solution: The electronic program guide information display device that receives electronic program guide information and displays the received electronic program guide information is provided with a discrimination means 7 that discriminates whether or not a broadcast program of each channel can be receptible for each channel included in the received electronic program guide information and a display means 9 that display the electronic program guide

information from which the electronic program guide information with respect to channels whose broadcast programs have been discriminated unreceptible is eliminated in the case of displaying the electronic program guide information.

[Claims]

[Claim 1] The electronic program guide information display characterized by having the display means on which the electronic program guide information from which the electronic program guide information about the channel were judged that is non receivable was deleted, displays in case a judgment means judge whether broadcast of the channel concerned is possible for receiving, and electronic program guide information display for each channel that are contained in the electronic program guide information that received in the electronic program guide information display that receives electronic program guide information and displays the received electronic program guide information.

[Claim 2] In the electronic program guide information display that receives electronic program guide information and displays the received electronic program guide information among the channels included in the received electronic program guide information for every predetermined time interval.

An extract means to extract only the channel that is broadcast in current time. A judgment means to judge whether broadcast of the channel concerned is possible for receiving for each channel which was extracted by the extract means and in case electronic program guide information is displayed, from the electronic program guide information about the channel currently extracted by the extract means. The electronic program guide information display characterized by having the display means on which the electronic program guide information from which the electronic program guide information about the channel

judged that is non receivable with the judgment means was deleted is displayed.

[Claim 3] The judgment means is an electronic program guide information display according to either of claims 1 and 2 characterized by having a means to judge whether broadcast of the channel concerned is possible for receiving for every channel, based on a means to tune up for every channel and to detect receiving level, and the detected receiving level, for every predetermined time interval.

[Claim 4] The judgment means is an electronic program guide information display according to either of claims 1 and 2 characterized by being what judges whether broadcast of the channel concerned is possible for receiving for every channel based on the information that expresses a receivable channel in the installation area of the electronic program guide information display preliminary stored by storage.

[Claim 5] The electronic program guide information display according to either of claims 1 and 2 characterized by having accessed URL that corresponds for every channel when the program that constitutes a TV program was transmitted by the Internet, and having a means to judge whether broadcast of the channel concerned is possible for receiving for every channel based on a means to detect the transmission speed of a program, and the detected transmission speed.

[Claim 6] The electronic program guide information display characterized by having the display means on which the electronic program guide information from which the electronic program guide information about the channel to which the viewing contract is not performed was deleted, displays in case a storage means store the channel to which the viewing contract is performed in the electronic program guide information display that receives electronic

program guide information and displays the received electronic program guide information, and electronic program guide information display.

[Claim 7] In the electronic program guide information display that receives electronic program guide information and displays the received electronic program guide information for every storage means to store the channel to which the viewing contract is performed, and predetermined time interval, an extract means to extract only the channel it is broadcast in current time that a program is among the channels contained in the received electronic program guide information. In case electronic program guide information is displayed, from the electronic program guide information about the channel extracted by the extract means. The electronic program guide information display characterized by having the display means on which the electronic program guide information from which the electronic program guide information about the channel to which the viewing contract is not performed was deleted is displayed.

[Detailed description of the invention]

[0001]

[Field of the invention] This invention relates to the electronic program guide information display that receives electronic program guide information and displays the received electronic program guide information.

[0002]

[Description of the prior art] In television broadcasting, it is expected that the number of channels increases in the future to hundreds of channels in recent years by satellite television broadcasting, cable television broadcasting, the television broadcasting using the Internet, digital television broadcast, etc., and it is becoming difficult to carry out the

electronic program guide information on all channels to a newspaper TV part like before.

[0003] It is considered preparing for this, sending out the information for guiding a program by television broadcasting collectively and displaying as an electronic program guide by the television side. An electronic program guide displays the electronic program guide information for guiding a program side by side like the TV part of the conventional newspaper. Also, what is made to link detailed information to the electronic program guide information on the arbitration in an electronic program guide and can be perused is considered.

[0004]

[Problems to be solved by the invention] For seeing hundreds of channels, it is necessary to see the electronic program guide information currently displayed from corner to corner in order to discover a program to watch from there since it is what displayed electronic program guide information side by side.

[0005] The information offer equipment that hierarchies and offers the data of an electronic program guide as what solves such a problem is proposed by JP 10-178597 A.

[0006] However, there was a problem that time was spent looking for a program in the equipment indicated by the above mentioned official report, since an electric-wave condition, broadcasting hours, etc. in each home are not related at all and it will be displayed to the electronic program guide information on an non receivable channel.

[0007] This invention aims at offering the electronic program guide information display on which only the electronic program guide information over the receivable channel among the received electronic program guide information can be displayed now.

[0008] This invention aims at offering the electronic program guide information display on which only the electronic program guide information over the channel that the program is broadcast and can be received can be displayed now in current time among the received electronic program guide information.

[0009] This invention aims at offering the electronic program guide information display on which only the electronic program guide information over the channel to which the viewing contract is performed among the received electronic program guide information can be displayed now.

[0010] This invention aims at offering the electronic program guide information display on which only the electronic program guide information over the channel to which the program is broadcast in current time among the received electronic program guide information, and the viewing contract is performed can be displayed now.

[0011]

[Means for solving the problem] The 1st electronic program guide information display according to this invention, in the electronic program guide information display that receives electronic program guide information and displays the received electronic program guide information, a judgment means to judge whether broadcast of the channel concerned is possible for receiving for each channel that are included in the received electronic program guide information, and in case electronic program guide information is displayed, it is characterized by having the display means on which the electronic program guide information from which the electronic program guide information about the channel judged that is non receivable was deleted is displayed.

[0012] The 2nd electronic program guide information display according to this invention, in the electronic program guide information display that receives electronic program guide information and displays the received electronic program guide information, among the channels included in the received electronic program guide information for every predetermined time interval, an extract means to extract only the channel that is broadcast in current time, a judgment means to judge whether broadcast of the channel concerned is possible for receiving for each channel that was extracted by the extract means, and in case electronic program guide information is displayed, from the electronic program guide information about the channel currently extracted by the extract means.

The electronic program guide information display characterized by having the display means on which the electronic program guide information from which the electronic program guide information about the channel judged that is non receivable with the judgment means was deleted is displayed.

[0013] Based on a means to tune up for every channel and to detect receiving level for every predetermined time interval as a judgment means, for example, and the detected receiving level, a device equipped with a means to judge whether broadcast of the channel concerned is possible for receiving for every channel is used.

[0014] Based on the information that expresses a receivable channel as a judgment means in the installation area of the electronic program guide information display preliminary stored by storage, for example, what judges whether broadcast of the channel concerned is possible for receiving for every channel is used.

[0015] When the program that constitutes a TV program is transmitted by the Internet, URL that corresponds for every channel is accessed, for example, and it is used although it

has a means to judge whether broadcast of the channel concerned is possible for receiving for every channel, based on a means to detect the transmission speed of a program, and the detected transmission speed.

[0016] The 3rd electronic program guide information display according to this invention is the electronic program guide information display characterized by having the display means on which the electronic program guide information from which the electronic program guide information about the channel to which the viewing contract is not performed was deleted, displays in case a storage means store the channel to which a viewing contract is performed in the electronic program guide information display that receives electronic program guide information and displays the received electronic program guide information and electronic program guide information display.

[0017] The 4th electronic program guide information display according to this invention In the electronic program guide information display that receives electronic program guide information and displays the received electronic program guide information, for every storage means to store the channel to which the viewing contract is performed, and predetermined time interval, an extract means to extract only the channel it broadcast in current time that a program from among the channels is included in the received electronic program guide information. In case electronic program guide information is displayed, from the electronic program guide information about the channel extracted by the extract means, it is characterized by having the display means on which the electronic program guide information from which the electronic program guide information about the channel to which the viewing contract is not performed was deleted is displayed.

[0018]

[Embodiment of the invention] Next, the embodiment of implementation of this invention is explained with reference to drawings.

[0019] Drawing 1 shows the configuration of an electronic program guide information display. The electronic program guide information extract part 1 receives the electronic program guide information that enters from satellite television broadcasting, cable television broadcasting, the Internet, a cellular-phone circuit, etc., from the received electronic program guide information, extracts electronic program guide information, such as the date, a channel number, program broadcast start time and program broadcast end time, and accumulates it to the 1st information storage part 2.

[0020] Also, when receiving electronic program guide information from satellite television broadcasting or cable television broadcasting, as a broken line A shown on drawing 1, the electronic program guide information received by the reception circuit part 3 is sent to the electronic program guide information extract part 1.

On the other hand, when receiving electronic program guide information from the Internet or a cellular-phone circuit, it replaces the path of a broken line A and it is the path of a broken line B and electronic program guide information is sent to the electronic program guide information extract part 1.

[0021] Drawing 2 shows an example of the information accumulated in the 1st information storage part 2. As shown on drawing 2, the electronic program guide information extracted in the electronic program guide information extract part 1 is accumulated in the 1st information storage part 2 as a 1 dimensional program information management table.

However, the data format of information and electronic program guide information is not restricted to this, and can consider different embodiments, such as a 2 dimensional table that uses the axis of ordinate as time amount and uses the axis of abscissa as the broadcast channel.

[0022] The program information analysis part 4 analyzes the electronic program guide information accumulated in the 1st information storage part 2 with reference to the current time information that the timer part 5 outputs and accumulates the channel information on a broadcasting station that the program is broadcast in the time of day, to the 2nd information storage part 6.

[0023] Drawing 3 shows an example of the information accumulated in the 2nd information storage part 6. As shown on drawing 3, the channel information analyzed and outputted in the program information analysis part 4 is accumulated in the 2nd information storage part 6 as 1 dimensional channel information management table. But, the data format of information and channel information is not restricted to this.

[0024] Also, in drawing 1, although the 1st information storage part 2 and the 2nd information storage part 6 are drawn as a separate block, they may consist of one semiconductor memory. And, media, such as not only semiconductor memory but a flexible disk and a magneto-optic-recording disc, may be used. Also, when acquiring electronic program guide information using networks, such as the Internet, the storage currently shared on the network can constitute the 1st information storage part 2 and the 2nd information storage part 6 too.

[0025] The discrimination part 7 judges whether broadcast of each channel is possible for receiving based on the receiving level detection result in the receiving level detecting element 8 of each channel accumulated in the 2nd

information storage part 6. The detailed explanation of the discrimination part 7 is given below.

[0026] The electronic program guide display 9 displays the electronic program guide information over the channel that was caused discrimination part 7 among the channels accumulated in the 2nd information storage part 6 and was judged to be possible for receiving. The electronic program guide display 9 arranges electronic program guide information like drawing 4 and displays it on a television screen.

[0027] Drawing 5 shows the electronic program guide information extract procedure by the electronic program guide information extract part 1.

[0028] An electronic program guide information extract is performed for every predetermined time interval. The electronic program guide information extract part 1 receives the electronic program guide information that enters from satellite television broadcasting, cable television broadcasting, the Internet, a cellular-phone circuit, etc. (S1). Electronic program guide information, such as a program name, a date, a broadcasting station name, a channel number, program broadcast start time, and program broadcast end time, is extracted from the received electronic program guide information (S2). The extracted electronic program guide information is stored in the 1st information storage part 2 (S3). A program information management table as shown on drawing 2 is generated by this.

[0029] Drawing 6 shows the program information analysis procedure by the program information analysis part 4.

[0030] Program information analysis processing is performed for every predetermined time interval. First, current time information is acquired from the timer part 5 (S11) and the channel information on the broadcasting

station that is broadcasting the program in current time of day is acquired with reference to current time information out of the program information management table stored in the 1st information storage part 2 (S12).

[0031] In order to judge whether a certain channel is broadcasting in current time, it is carried out by checking program start and end time from all the electronic program guide information corresponding to the channel.

[0032] For example, when it will be current time in 1:00 of midnight, the judgment of whether to broadcast in the channel 2 checks program start and end time of a program from all the electronic program guide information on a channel 2, and is performed by judging whether the program in which program start and end time fall on current time (namely, 1:00 of midnight) exists.

[0033] The channel information on a channel that broadcast is performed in current time is stored in the 2nd information storage part 6 (S13). A channel information management table as shown on drawing 3 is generated by this. By drawing 3, the channel to which broadcast is performed in current time shows the example that are channels 2, 4, 6, 8, 10 and 34 and BS9.

[0034] Drawing 7 shows the possible for receiving channel judging procedure by the discrimination part 7.

[0035] Possible for receiving channel judging processing is performed whenever program information analysis processing is completed. First, channel information is acquired from the channel information management table accumulated in the 2nd information storage part 6 (S21). And it actually confirms whether to be possible for receiving about each of the acquired channel information.

[0036] That is, the reception circuit part 3 is aligned with the channel for each channel information of every (S23), receiving level is acquired from the receiving level detecting element 8 (S24), and it judges whether it is more than a correct level for receiving level to view (S25). When receiving level has not reached a correct level, the channel information concerned is deleted from a channel information management table (S26).

[0037] For example, if judged with channel numbers 4, 34, BS9 and the receiving level having not reached a correct level, such channel information will be deleted from a channel information management table. And this possible for receiving channel judging processing that the check of receiving level finishes to all the channel information accumulated into the channel information management table (YES at S22) is completed. Consequently, only the channel information on the channel judged as receiving level being more than a correct level will remain in a channel information management table.

[0038] Drawing 8 shows the electronic program guide display processing procedure by the electronic program guide display 9. Electronic program guide display processing is performed whenever the electronic program guide display command from a user is inputted.

[0039] First, channel information receivable from the channel information management table in the 2nd information storage part 6 is read (S31) and only the electronic program guide information corresponding to the read channel information is read from the program information management table in the 1st information storage part 2 (S32). And after putting in order and changing the read electronic program guide information into broadcast time order (S33), electronic program guide information is displayed on a television screen with the embodiment as shown on drawing 4 (S34).

[0040] According to the embodiment of the above mentioned implementation, in current time, only the electronic program guide information over the channel which the program is broadcast and can be received can be displayed now among the received electronic program guide information.

[0041] Although only the electronic program guide information over the channel which the program is broadcast and can be received is displayed in current time among the received electronic program guide information with the embodiment of the above mentioned implementation, it is possible to display only the electronic program guide information over the receivable channel among the received electronic program guide information. In this case, it will be judged by the discrimination part 7 for each channel that is contained in the electronic program guide information that is unnecessary as for the timer part 5 that stands in a row in the program information analysis part 4 and this, and was stored in the 1st information storage part 2 of every whether broadcast of the channel concerned is possible for receiving.

[0042] In addition, the judgment of whether to be a receivable channel may be performed as follows.

[0043] That is, the Channel Storage Discrimination Memory 11 classified by area that consists of nonvolatile memory is made to store channel information receivable according to an area preliminary, as shown on drawing 9. And when an electronic program guide information display is installed, it enables it to specify channel information receivable in the area concerned based on the information in memory 11 by making a user input the information on an area that the electronic program guide information display was installed. Based on the channel information in which this specified reception is possible, it judges whether it is a receivable channel.

[0044] When the program (image and voice data) that constitutes a TV program is transmitted by the Internet, it can judge as follows whether it is a receivable channel. In other words, URL corresponding to the channel that should be discriminated whether it is ready for receiving is accessed and the transmission speed from program supply origin is investigated. For example, if transmission speed is below 500 Kbps, broadcast of the particular channel is discriminated as non receivable.

[0045] With form of the above mentioned implementation, from among channel information inside the channel information management table that is accumulated in the 2nd information storage part 6, it has tried to delete the information of the reception impossible channel, but as shown on drawing 10, while the user registers the channel that is carrying out the viewing contract into the contract information storage memory 12 that consists of nonvolatile memory, the contract channel discrimination part 13 is formed. A user may be made to delete the channel that has not carried out the viewing contract from among the channel information in the channel information management table accumulated in the 2nd information storage part 6.

[0046] If it does in this way, only the electronic program guide information over the channel to which the program is broadcast in current time among the received electronic program guide information, and the viewing contract is performed can be displayed.

[0047] It is possible to display only the electronic program guide information over the channel to which the viewing contract is performed among the received electronic program guide information. In this case, the program information analysis part 4 is unnecessary, and only the electronic program guide information over the channel to which the viewing contract is performed among the

channels contained in the electronic program guide information stored in the 1st information storage part 2 is displayed.

[0048]

[Effect of the invention] According to this invention, only the electronic program guide information over the receivable channel among the received electronic program guide information can be displayed now.

[0049] According to this invention, in current time, only the electronic program guide information over the channel that the program is broadcast and can be received can be displayed now among the received electronic program guide information.

[0050] According to this invention, only the electronic program guide information over the channel to which the viewing contract is performed among the received electronic program guide information can be displayed now.

[0051] According to this invention, only the electronic program guide information over the channel to which the program is broadcast in current time among the received electronic program guide information, and the viewing contract is performed can be displayed now.

[Brief description of the drawings]

[Drawing 1] is the outline block diagram showing the configuration of an electronic program guide information display.

[Drawing 2] is drawing showing an example of a program information management table.

[Drawing 3] is drawing showing an example of a channel information management table.

[Drawing 4] is drawing showing an example of a display of the electronic program guide.

[Drawing 5] is the flow chart showing the electronic program guide information extract procedure by the electronic program guide information extract part.

[Drawing 6] is the flow chart showing the program information analysis procedure by the program information analysis part.

[Drawing 7] is the flow chart showing the possible for receiving channel judging procedure by the discrimination part.

[Drawing 8] is the flow chart showing the electronic program guide display process procedure by the electronic program guide display.

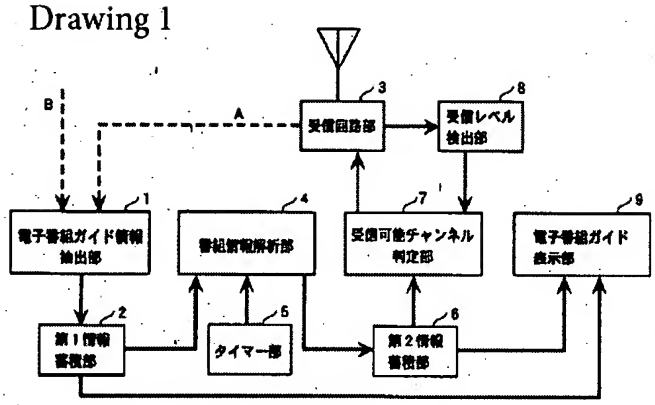
[Drawing 9] is the outline block diagram showing the configuration of other electronic program guide information displays.

[Drawing 10] is the outline block diagram showing the configuration of the other electronic program guide information display.

[Description of numbers]

1 Electronic Program Guide Information Extract Part
2 1st Information Storage Part
3 Reception Circuit Part
4 Program Information Analysis Part
5 Timer Part
6 2nd Information Storage Part
7 Discrimination Part
8 Receiving Level Detecting Element
9 Electronic Program Guide Display
11 Channel Storage Discrimination Memory Classified by Area
12 Contract Information Storage Memory

Drawing 1

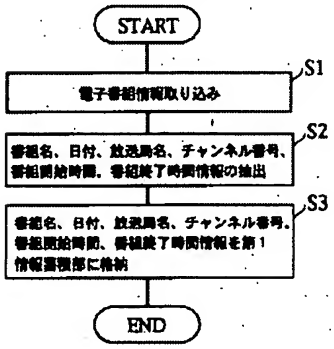


station: A放送
channel: 2
year: 1999
month: 06
date: 07
start: 19:00
end: 19:57
program-title: AAAニュースワイド

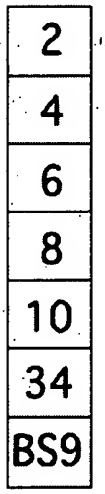
station: B放送
channel: 4
year: 1999
month: 06
date: 07
start: 19:00
end: 19:30
program-title: BBBヘッドライン

Drawing 2

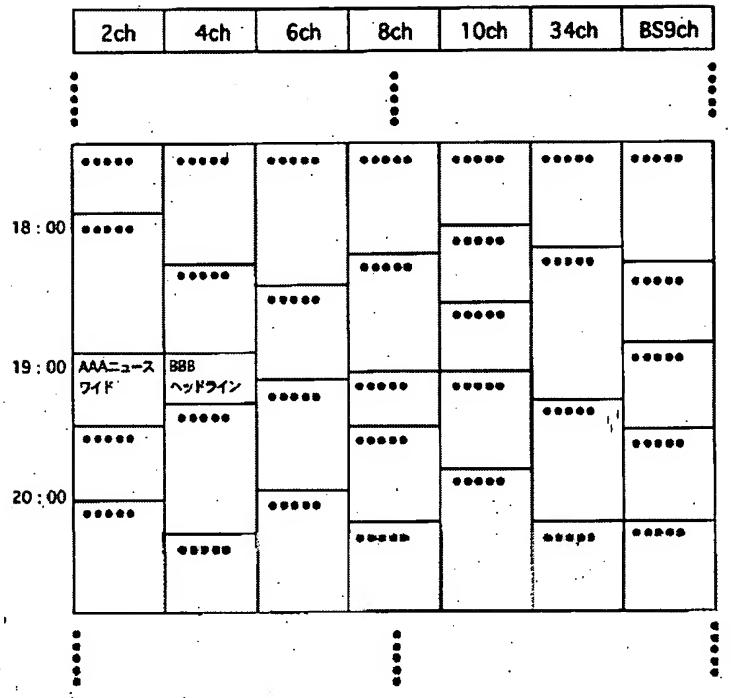
Drawing 5



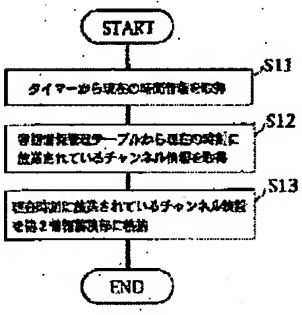
Drawing 3



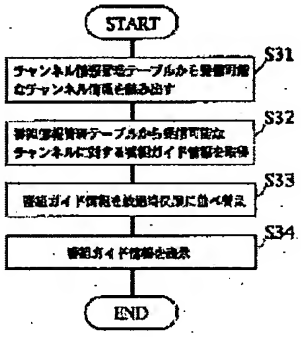
Drawing 4



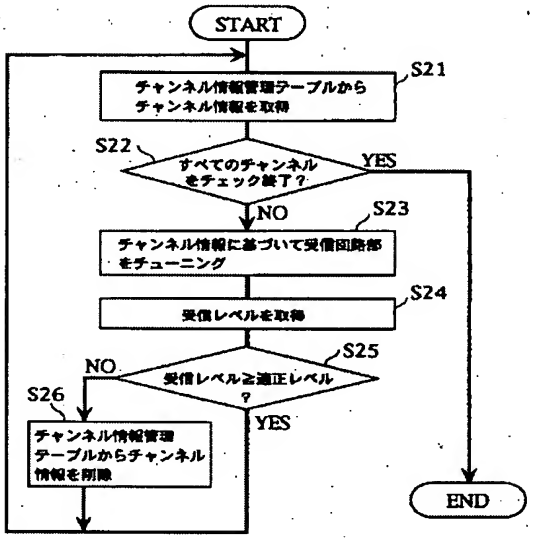
Drawing 6



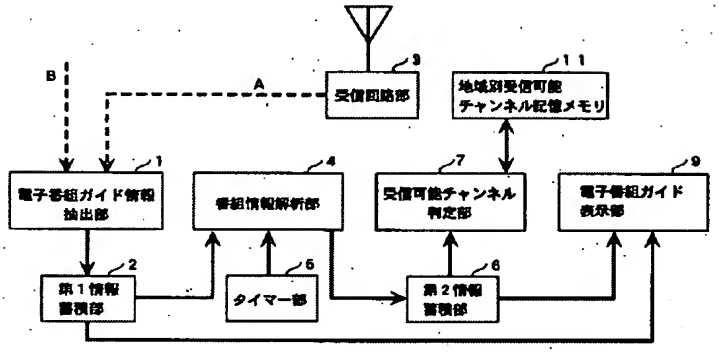
Drawing 8



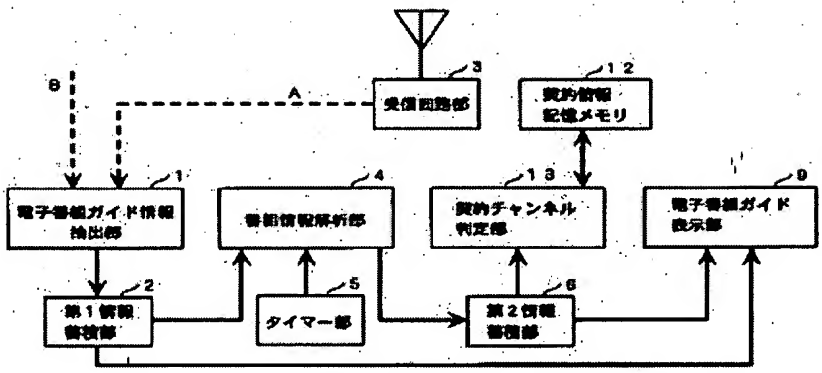
Drawing 7



Drawing 9



Drawing 10


B
A
3
受信回路部
12
契約情報
記憶メモリ
1
電子番組ガイド情報
抽出部
4
番組情報解析部
13
契約チャンネル
判定部
9
電子番組ガイド
表示部
2
第1情報
蓄積部
5
タイマー部
6
第2情報
蓄積部

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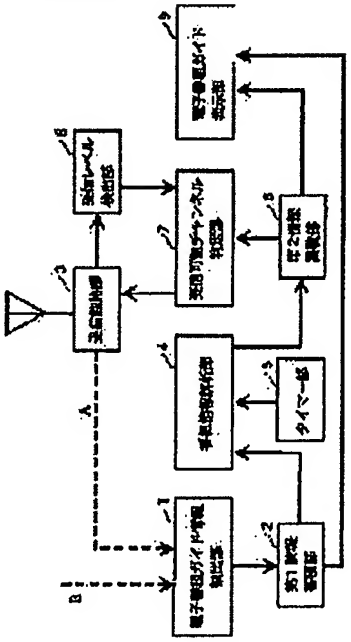
(54) ELECTRONIC PROGRAM GUIDE INFORMATION DISPLAY DEVICE

(57)Abstract:
PROBLEM TO BE SOLVED: To obtain an electronic program guide information display device that can display only electronic program guide information of receptible channels among received electronic program guide information sets.
SOLUTION: The electronic program guide information display device that receives electronic program guide information and displays the received electronic program guide information is provided with a discrimination means 7 that discriminates whether or not a broadcast program of each channel can be receptible for each channel included in the received electronic program guide information and a display means 9 that display the electronic program guide information from which the electronic program guide information with respect to channels whose broadcast programs have been discriminated unreceptible is eliminated in the case of displaying the electronic program guide information.



LEGAL STATUS

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[Date of final disposal for application]
[Patent number]

[Date of registration]

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[Date of requesting appeal against examiner's decision of rejection]

[Date of extinction of right]

CLAIMS

[Claim(s)]

[Claim 1] The electronic program guide information display characterized by to have the display means on which the electronic program guide information from which the electronic program guide information about the channel were judged that is receive-not-ready ability was deleted displays in case a judgment means judge whether broadcast of the channel concerned is ability ready for receiving, and electronic program guide information display for each [are contained in the electronic program guide information which received in the electronic program guide information display which receives electronic program guide information and displays the received electronic program guide information] channel of every.

[Claim 2] In the electronic program guide information display which receives electronic program guide information and displays the received electronic program guide information Among the channels contained in the received electronic program guide information for every predetermined time interval [from] An extract means to extract only the channel it is broadcast in current time that a program is, A judgment means to judge whether broadcast of the channel concerned is ability ready for receiving for each [which was extracted by the extract means] channel of every, and in case electronic program guide information is displayed, from the electronic program guide information about the channel currently extracted by the extract means The electronic program guide information display characterized by having the display means on which the electronic program guide information from which the electronic program guide information about the channel judged that is receive-not-ready ability with the judgment means was deleted is displayed.

[Claim 3] A judgment means is an electronic program guide information display given in either of claims 1 and 2 characterized by having a means to judge whether broadcast of the channel concerned is ability ready for receiving for every channel, based on a means to tune up for every channel and to detect receiving level, and the detected receiving level, for every predetermined time interval.

[Claim 4] A judgment means is an electronic program guide information display given in either of claims 1 and 2 characterized by being what judges whether broadcast of the channel concerned is ability ready for receiving for every channel based on the information which expresses a receivable channel in the installation area of the electronic program guide information display beforehand memorized by storage.

[Claim 5] It is an electronic program guide information display given in either of claims 1 and 2 characterized by having accessed the judgment means at URL which corresponds for every channel when the program which constitutes a TV program was transmitted by the Internet, and having a means to judge whether broadcast of the channel concerned is ability ready for receiving for every channel based on a means to detect the transmission speed of a program, and the detected transmission speed.

[Claim 6] The electronic program guide information display characterized by to have the display means on which the electronic program guide information from which the electronic program guide information about the channel to which the viewing-and-listening contract is not performed was deleted displays in case a storage means memorize the channel to which the viewing-and-listening contract is performed in the electronic program guide information display which receives electronic program guide information and displays the received electronic program guide information, and electronic program guide information display.

[Claim 7] In the electronic program guide information display which receives electronic program guide information and displays the received electronic program guide information For every storage means to memorize the channel to which the viewing-and-listening contract is performed, and predetermined time interval An extract means to extract only the channel it is broadcast in current time that a program is from from among the channels contained in the received electronic program guide

information. In case electronic program guide information is displayed, from the electronic program guide information about the channel extracted by the extract means The electronic program guide information display characterized by having the display means on which the electronic program guide information from which the electronic program guide information about the channel to which the viewing-and-listening contract is not performed was deleted is displayed.

DETAILED DESCRIPTION

[Detailed Description of the Invention]

[0001]

[Field of the Invention] This invention relates to the electronic program guide information display which receives electronic program guide information and displays the received electronic program guide information.

[0002]

[Description of the Prior Art] In television broadcasting, it is expected that many channelization is progressing and the number of channels increases in the future to hundreds of channels in recent years by satellite television broadcasting, cable television broadcasting, the television broadcasting using the Internet, digital television broadcast, etc., and it is becoming difficult to carry the electronic program guide information on all channels to a newspaper TV section like before.

[0003] It considers preparing for this, sending out the information for guiding a program by television broadcasting collectively, and displaying as an electronic program guide by the television side. An electronic program guide displays the electronic program guide information for guiding a program side by side like the TV section of the conventional newspaper. Moreover, what is made to link detailed information to the electronic program guide information on the arbitration in an electronic program guide, and can be perused is considered.

[0004]

[Problem(s) to be Solved by the Invention] For seeing hundreds of channels, although it is necessary to see the electronic program guide information currently displayed from a corner to a corner in order to discover a program to watch from there since it is what displayed electronic program guide information side by side, time and effort is [the electronic program guide conventionally considered as mentioned above] ****** past **.

[0005] The information offer equipment which hierarchizes and offers the data of an electronic program guide as what solves such a problem is proposed by JP,10-178597,A.

[0006] However, in the equipment indicated by ** et al. and the above-mentioned official report, since an electric-wave condition, broadcasting hours, etc. in each home are not related at all and it will be displayed to the electronic program guide information on an unreceivable channel, there was a problem that was time and effort ** and kept in looking for a program too.

[0007] This invention aims at offering the electronic program guide information display on which only the electronic program guide information over the receivable channel among the received electronic program guide information can be displayed now.

[0008] This invention aims at offering the electronic program guide information display on which only the electronic program guide information over the channel which the program is broadcast and can be received can be displayed now in current time among the received electronic program guide information.

[0009] This invention aims at offering the electronic program guide information display on which only the electronic program guide information over the channel to which the viewing-and-listening contract is performed among the received electronic program guide information can be displayed now.

[0010] This invention aims at offering the electronic program guide information display on which only the electronic program guide information over the channel to which the program is broadcast in current time among the received electronic program guide

information, and the viewing-and-listening contract is performed can be displayed now.

[0011]

[Means for Solving the Problem] The 1st electronic program guide information display by this invention In the electronic program guide information display which receives electronic program guide information and displays the received electronic program guide information A judgment means to judge whether broadcast of the channel concerned is ability ready for receiving for each [are contained in the received electronic program guide information] channel of every, And in case electronic program guide information is displayed, it is characterized by having the display means on which the electronic program guide information from which the electronic program guide information about the channel judged that is receive-not-ready ability was deleted is displayed.

[0012] The 2nd electronic program guide information display by this invention In the electronic program guide information display which receives electronic program guide information and displays the received electronic program guide information Among the channels contained in the received electronic program guide information for every predetermined time interval [from] An extract means to extract only the channel it is broadcast in current time that a program is, A judgment means to judge whether broadcast of the channel concerned is ability ready for receiving for each [which was extracted by the extract means] channel of every, and in case electronic program guide information is displayed, from the electronic program guide information about the channel currently extracted by the extract means The electronic program guide information display characterized by having the display means on which the electronic program guide information from which the electronic program guide information about the channel judged that is receive-not-ready ability with the judgment means was deleted is displayed.

[0013] Based on a means to tune up for every channel and to detect receiving level for every predetermined time interval as a judgment means, for example, and the detected receiving level, a thing equipped with a means to judge whether broadcast of the channel concerned is ability ready for receiving for every channel is used.

[0014] Based on the information which expresses a receivable channel as a judgment means in the installation area of the electronic program guide information display beforehand memorized by storage, for example, what judges whether broadcast of the channel concerned is ability ready for receiving for every channel is used.

[0015] When the program which constitutes a TV program is transmitted by the Internet, as a judgment means, URL which corresponds for every channel is accessed, for example, and it is used although it has a means to judge whether broadcast of the channel concerned is ability ready for receiving for every channel, based on a means to detect the transmission speed of a program, and the detected transmission speed.

[0016] The 3rd electronic program guide information display by this invention is the electronic program guide information display characterized by to have the display means on which the electronic program guide information from which the electronic program guide information about the channel to which the viewing-and-listening contract is not performed was deleted displays in case a storage means memorize the channel to which a viewing-and-listening contract is performed in the electronic program guide information display which receives electronic program guide information and displays the received electronic program guide information, and electronic program guide information display.

[0017] The 4th electronic program guide information display by this invention In the electronic program guide information display which receives electronic program guide information and displays the received electronic program guide information For every storage means to memorize the channel to which the viewing-and-listening contract is performed, and predetermined time interval An extract means to extract only the channel it is broadcast in current time that a program is from from among the channels contained in the received electronic program guide information, In case electronic program guide information is displayed, from the electronic program guide information about the channel extracted by the extract means It is characterized by having the display means on which the electronic program guide information from which the electronic program guide information about the channel to which the viewing-and-listening contract is not performed was deleted is displayed.

[0018]

[Embodiment of the Invention] Hereafter, the gestalt of implementation of this invention is explained with reference to a drawing.

[0019] Drawing 1 shows the configuration of an electronic program guide information display. The electronic program guide information extract section 1 receives the electronic program guide information which comes from satellite television broadcasting, cable television broadcasting, the Internet, a cellular-phone circuit, etc., from the received electronic program guide information, extracts electronic program guide information, such as the date, a channel number, program broadcast start time, and program broadcast end time, and accumulates it to the 1st information storage section 2.

[0020] In addition, when receiving electronic program guide information from satellite television broadcasting or cable television broadcasting, as a broken line A shows to drawing 1 , the electronic program guide information received by the receiving-circuit section 3 is sent to the electronic program guide information extract section 1. On the other hand, when receiving electronic program guide information from the Internet or a cellular-phone circuit, it replaces with the path of a broken line A, and it is the path of a broken line B and electronic program guide information is sent to the electronic program guide information extract section 1.

[0021] Drawing 2 shows an example of the information accumulated in the 1st information storage section 2. As shown in drawing 2 , the electronic program guide information extracted in the electronic program guide information extract section 1 is accumulated in the 1st information storage section 2 as a 1-dimensional program information management table. However, the data format of ** et al. and electronic program guide information is not restricted to this, and can consider various gestalten, such as a two-dimensional table which used the axis of ordinate time amount and used the axis of abscissa as the broadcast channel.

[0022] The program information analysis section 4 analyzes the electronic program guide information accumulated in the 1st information storage section 2 with reference to the current time information which the timer section 5 outputs, and accumulates the channel information on a broadcasting station that the program is broadcast in the time of day of the present **, to the 2nd information storage section 6.

[0023] Drawing 3 shows an example of the information accumulated in the 2nd information storage section 6. As shown in drawing 3 , the channel information analyzed and outputted in the program information analysis section 4 is accumulated in the 2nd information storage section 6 as a 1-dimensional channel information management table. However, the data format of ** et al. and channel information is not restricted to this.

[0024] In addition, in drawing 1 , although the 1st information storage section 2 and the 2nd information storage section 6 are drawn as a separate block, they may consist of one semiconductor memory. Moreover, media, such as not only semiconductor memory but a flexible disk and a magneto-optic-recording disk, may be used. Moreover, when acquiring electronic program guide information using networks, such as the Internet, the storage currently shared on the network can also constitute the 1st information storage section 2 and the 2nd information storage section 6.

[0025] The ready-for-receiving ability channel judging section 7 judges whether broadcast of each channel is ability ready for receiving based on the receiving level detection result in the receiving level detecting element 8 of each channel accumulated in the 2nd information storage section 6. About detailed explanation of the ready-for-receiving ability channel judging section 7, it mentions later.

[0026] The electronic program guide display 9 displays the electronic program guide information over the channel which was caused ready-for-receiving ability channel judging section 7 among the channels accumulated in the 2nd information storage section 6, and was judged to be ability ready for receiving. The electronic program guide display 9 arranges electronic program guide information like drawing 4 , and displays it on a television screen etc.

[0027] Drawing 5 shows the electronic program guide information extract procedure by the electronic program guide information extract section 1.

[0028] An electronic program guide information extract is performed for every predetermined time interval. The electronic program guide information extract section 1 receives the electronic program guide information which comes from satellite television broadcasting, cable television broadcasting, the Internet, a cellular-phone circuit, etc. (S1). Electronic program guide information,

such as a program name, a date, a broadcasting station name, a channel number, program broadcast start time, and program broadcast end time, is extracted from the received electronic program guide information (S2). The extracted electronic program guide information is stored in the 1st information storage section 2 (S3). A program information management table as shown in drawing 2 is generated by this.

[0029] Drawing 6 shows the program information analysis procedure by the program information analysis section 4.

[0030] Program information analysis processing is performed for every predetermined time interval. First, current time information is acquired from the timer section 5 (S11), and the channel information on the broadcasting station which is broadcasting the program in current time of day is acquired with reference to current time information out of the program information management table stored in the 1st information storage section 2 (S12).

[0031] Here, in order to judge whether a certain channel is broadcasting in current time, it is carried out by checking program initiation and end time from all the electronic program guide information corresponding to the channel.

[0032] For example, when it will be current time in 1:00 of midnight, the judgment of whether to broadcast in the channel 2 checks program initiation and end time of a program from all the electronic program guide information on a channel 2, and is performed by judging whether the program in which program initiation and end time fall on current time (namely, midnight 1 o'clock) exists.

[0033] The channel information on a channel that broadcast is performed in current time is stored in the 2nd information storage section 6 (S13). A channel information management table as shown in drawing 3 is generated by this. By drawing 3 , the channel to which broadcast is performed in current time shows the example which are channels 2, 4, 6, 8, 10, and 34 and BS9.

[0034] Drawing 7 shows the ready-for-receiving ability channel judging procedure by the ready-for-receiving ability channel judging section 7.

[0035] Ready-for-receiving ability channel judging processing is performed whenever program information analysis processing is completed. First, channel information is acquired from the channel information management table accumulated in the 2nd information storage section 6 (S21). And it actually confirms whether to be ability ready for receiving about each of the acquired channel information.

[0036] That is, the receiving-circuit section 3 is aligned with the channel for each [which was acquired] channel information of every (S23), receiving level is acquired from the receiving level detecting element 8 (S24), and it judges whether it is more than a correct level for receiving level to view and listen (S25). When receiving level has not reached a correct level, the channel information concerned is deleted from a channel information management table (S26).

[0037] For example, if judged with channel numbers 4 and 34 and the receiving level to BS9 having not reached a correct level, such channel information will be deleted from a channel information management table. And this ready-for-receiving ability channel judging processing that the check of receiving level finishes to all the channel information accumulated into the channel information management table (it is YES at S22) is completed. Consequently, only the channel information on the channel judged as receiving level being more than a correct level will remain in a channel information management table.

[0038] Drawing 8 shows the electronic program guide display-processing procedure by the electronic program guide display 9. Electronic program guide display processing is performed whenever the electronic program guide display command from a user is inputted.

[0039] First, channel information receivable from the channel information management table in the 2nd information storage section 6 is read (S31), and only the electronic program guide information corresponding to the read channel information is read from the program information management table in the 1st information storage section 2 (S32). And after putting in order and changing the read electronic program guide information into broadcast time order (S33), electronic program guide information is displayed on a television screen etc. with a gestalt as shown in drawing 4 (S34).

[0040] According to the gestalt of the above-mentioned implementation, in current time, only the electronic program guide information over the channel which the program is broadcast and can be received can be displayed now among the received

electronic program guide information.

[0041] Although only the electronic program guide information over the channel which the program is broadcast and can be received is displayed in current time among the received electronic program guide information with the gestalt of the above-mentioned implementation, you may make it display only the electronic program guide information over the receivable channel among the received electronic program guide information. In this case, it will be judged by the ready-for-receiving ability channel judging section 7 for each [which is contained in the electronic program guide information which is unnecessary as for the timer section 5 which stands in a row in the program information analysis section 4 and this, and was stored in the 1st information storage section 2] channel of every whether broadcast of the channel concerned is ability ready for receiving.

[0042] In addition, the judgment of whether to be a receivable channel may be performed as follows.

[0043] That is, the ready-for-receiving ability channel storage memory 11 classified by area which consists of nonvolatile memory is made to memorize channel information receivable according to an area beforehand, as shown in drawing 9 . And when an electronic program guide information display is installed, it enables it to specify channel information receivable in the area concerned based on the information in memory 11 by making a user input the information on an area that the electronic program guide information display was installed. Based on the channel information in which this specified reception is possible, it judges whether it is a receivable channel.

[0044] When the program (an image and voice data) which constitutes a TV program is transmitted by the Internet, it can judge as follows whether it is a receivable channel. That is, URL corresponding to the channel which should judge whether it is ability ready for receiving is accessed, and the transmission speed from program supply origin is investigated. For example, if transmission speed is 500 or less Kbpses, broadcast of the channel concerned will judge with receive-not-ready ability.

[0045] Although he is trying to have deleted the information on an unreceivable channel from from with the gestalt of the above-mentioned implementation among the channel information in the channel information management table accumulated in the 2nd information storage section 6 As shown in drawing 10 , while the user registers the channel which is carrying out the viewing-and-listening contract into the contract information storage memory 12 which consists of nonvolatile memory, the contract channel judging section 13 is formed. A user may be made to delete the channel which has not carried out the viewing-and-listening contract from from among the channel information in the channel information management table accumulated in the 2nd information storage section 6.

[0046] If it does in this way, only the electronic program guide information over the channel to which the program is broadcast in current time among the received electronic program guide information, and the viewing-and-listening contract is performed can be displayed.

[0047] You may make it display only the electronic program guide information over the channel to which the viewing-and-listening contract is performed among the received electronic program guide information. In this case, the program information analysis section 4 is unnecessary, and only the electronic program guide information over the channel to which the viewing-and-listening contract is performed among the channels contained in the electronic program guide information stored in the 1st information storage section 2 is displayed.

[0048]

[Effect of the Invention] According to this invention, only the electronic program guide information over the receivable channel among the received electronic program guide information can be displayed now.

[0049] According to this invention, in current time, only the electronic program guide information over the channel which the program is broadcast and can be received can be displayed now among the received electronic program guide information.

[0050] According to this invention, only the electronic program guide information over the channel to which the viewing-and-listening contract is performed among the received electronic program guide information can be displayed now.

[0051] According to this invention, only the electronic program guide information over the channel to which the program is

broadcast in current time among the received electronic program guide information, and the viewing-and-listening contract is performed can be displayed now.

DESCRIPTION OF DRAWINGS

[Brief Description of the Drawings]

[Drawing 1] It is the outline block diagram showing the configuration of an electronic program guide information display.

[Drawing 2] It is drawing showing an example of a program information management table.

[Drawing 3] It is drawing showing an example of a channel information management table.

[Drawing 4] It is drawing showing an example of a display of an electronic program guide.

[Drawing 5] It is the flow chart which shows the electronic program guide information extract procedure by the electronic program guide information extract section.

[Drawing 6] It is the flow chart which shows the program information analysis procedure by the program information analysis section.

[Drawing 7] It is the flow chart which shows the ready-for-receiving ability channel judging procedure by the ready-for-receiving ability channel judging section.

[Drawing 8] It is the flow chart which shows the electronic program guide display process procedure by the electronic program guide display.

[Drawing 9] It is the outline block diagram showing the configuration of other electronic program guide information displays.

[Drawing 10] It is the outline block diagram showing the configuration of the electronic program guide information display of further others.

[Description of Notations]

1 Electronic Program Guide Information Extract Section

2 1st Information Storage Section

3 Receiving-Circuit Section

4 Program Information Analysis Section

5 Timer Section

6 2nd Information Storage Section

7 Ready-for-Receiving Ability Channel Judging Section

8 Receiving Level Detecting Element

9 Electronic Program Guide Display

11 Ready-for-Receiving Ability Channel Storage Memory Classified by Area

12 Contract Information Storage Memory

[Translation done.]

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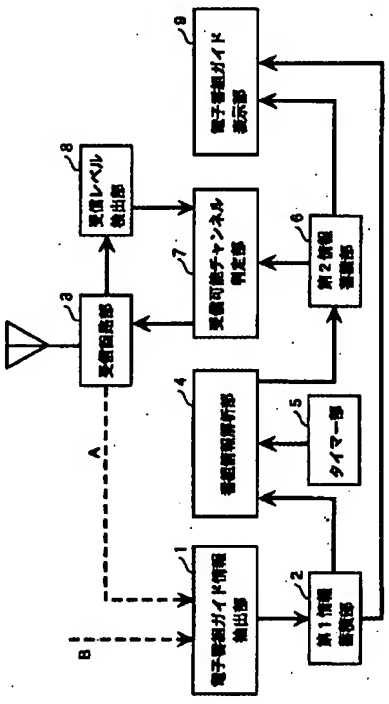
(54)【発明の名称】　電子番組ガイド情報表示装置

(57)【要約】
【課題】　この発明は、受信した電子番組ガイド情報のうち、受信可能なチャンネルに対する電子番組ガイド情報のみを表示させることができるようになる電子番組ガイド情報表示装置を提供することを目的とする。
【解決手段】　電子番組ガイド情報を受信し、受信した電子番組ガイド情報を表示する電子番組ガイド情報表示装置において、受信した電子番組ガイド情報に含まれる各チャンネル毎に、当該チャンネルの放送が受信可能であるか否かを判定する判定手段、および電子番組ガイド情報を表示する際に、受信不可能であると判定されたチャンネルに関する電子番組ガイド情報が削除された電子番組ガイド情報を表示させる表示手段を備えている。



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【特許請求の範囲】

【請求項１】　電子番組ガイド情報を受信し、受信した電子番組ガイド情報を表示する電子番組ガイド情報表示装置において、

受信した電子番組ガイド情報に含まれる各チャンネル毎に、当該チャンネルの放送が受信可能であるか否かを判定する判定手段、および電子番組ガイド情報を表示する際に、受信不可能であると判定されたチャンネルに関する電子番組ガイド情報が削除された電子番組ガイド情報を表示させる表示手段、

を備えていることを特徴とする電子番組ガイド情報表示装置。

【請求項２】　電子番組ガイド情報を受信し、受信した電子番組ガイド情報を表示する電子番組ガイド情報表示装置において、

所定時間間隔毎に、受信した電子番組ガイド情報に含まれるチャンネルのうちから、現在時刻において番組が放送されているチャンネルのみを抽出する抽出手段、

抽出手段によって抽出された各チャンネル毎に、当該チャンネルの放送が受信可能であるか否かを判定する判定手段、および電子番組ガイド情報を表示する際に、抽出手段によって抽出されているチャンネルに関する電子番組ガイド情報から、判定手段によって受信不可能であると判定されたチャンネルに関する電子番組ガイド情報が削除された電子番組ガイド情報を表示させる表示手段、

を備えていることを特徴とする電子番組ガイド情報表示装置。

【請求項３】　判定手段は、

所定時間間隔毎に、各チャンネル毎にチューニングを行なって受信レベルを検出する手段、および検出した受信レベルに基づいて、各チャンネル毎に当該チャンネルの放送が受信可能であるか否かを判定する手段、

を備えていることを特徴とする請求項１および２のいずれかに記載の電子番組ガイド情報表示装置。

【請求項４】　判定手段は、予め記憶装置に記憶されている、電子番組ガイド情報表示装置の設置地域において受信可能なチャンネルを表す情報に基づいて、各チャンネル毎に当該チャンネルの放送が受信可能であるか否かを判定するものであることを特徴とする請求項１および２のいずれかに記載の電子番組ガイド情報表示装置。

【請求項５】　テレビ番組を構成するプログラムがインターネットによって伝送されてくる場合には、

判定手段は、

各チャンネル毎に対応するＵＲＬにアクセスして、プログラムの通信速度を検出する手段、および検出した通信速度に基づいて、各チャンネル毎に当該チャンネルの放送が受信可能であるか否かを判定する手段、

を備えていることを特徴とする請求項１および２のいずれかに記載の電子番組ガイド情報表示装置。

【請求項６】　電子番組ガイド情報を受信し、受信した

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電子番組ガイド情報を表示する電子番組ガイド情報表示装置において、

視聴契約が行なわれているチャンネルを記憶する記憶手段、および電子番組ガイド情報を表示する際に、視聴契約が行なわれていないチャンネルに関する電子番組ガイド情報が削除された電子番組ガイド情報を表示させる表示手段、

を備えていることを特徴とする電子番組ガイド情報表示装置。

【請求項７】　電子番組ガイド情報を受信し、受信した電子番組ガイド情報を表示する電子番組ガイド情報表示装置において、

視聴契約が行なわれているチャンネルを記憶する記憶手段、

所定時間間隔毎に、受信した電子番組ガイド情報に含まれるチャンネルのうちから、現在時刻において番組が放送されているチャンネルのみを抽出する抽出手段、

電子番組ガイド情報を表示する際に、抽出手段によって抽出されたチャンネルに関する電子番組ガイド情報から、視聴契約が行なわれていないチャンネルに関する電子番組ガイド情報が削除された電子番組ガイド情報を表示させる表示手段、

を備えていることを特徴とする電子番組ガイド情報表示装置。

【発明の詳細な説明】

【０００１】

【発明の属する技術分野】この発明は、電子番組ガイド情報を受信し、受信した電子番組ガイド情報を表示する電子番組ガイド情報表示装置に関する。

【０００２】

【従来の技術】テレビジョン放送では、近年、衛星テレビジョン放送、ケーブルテレビジョン放送、インターネットを利用したテレビジョン放送及びディジタルテレビジョン放送等により、多チャンネル化が進んでおり、将来はチャンネル数が数百チャンネルに増加することが予想され、従来のように新聞のテレビ欄に全チャンネルの電子番組ガイド情報を掲載することは困難になってきている。

【０００３】これに備えて、番組を案内するための情報を纏めてテレビジョン放送で送出し、テレビジョン側で電子番組ガイドとして表示することが考えられている。電子番組ガイドは、従来の新聞のテレビ欄のように、番組を案内する為の電子番組ガイド情報を並べて表示したものである。また、電子番組ガイド中の任意の電子番組ガイド情報に詳細情報をリンクさせて閲覧出来るようなものが考えられている。

【０００４】

【発明が解決しようとする課題】上述したように、従来、考えられている電子番組ガイドは、電子番組ガイド情報を並べて表示したものなので、そこから見たい番組

を探し出すには、表示してある電子番組ガイド情報を隅から隅迄見る必要があるが、数百チャンネル分を見るのは手間が懸かり過ぎる。

【０００５】このような問題を解決するものとして、電子番組ガイドのデータを階層化して提供する情報提供装置が特開平１０－１７８５９７号公報に提案されている。

【０００６】然し乍ら、上記公報に開示された装置においては、各家庭における電波状態や放送時間等とは全く関係なく、受信できないチャンネルの電子番組ガイド情報までも表示されてしまうので、やはり番組を探すのに手間が懸かってしまうという問題があった。

【０００７】この発明は、受信した電子番組ガイド情報のうち、受信可能なチャンネルに対する電子番組ガイド情報のみを表示させることができるようになる電子番組ガイド情報表示装置を提供することを目的とする。

【０００８】この発明は、受信した電子番組ガイド情報のうち、現在時刻において番組が放送されておりかつ受信可能なチャンネルに対する電子番組ガイド情報のみを表示させることができるようになる電子番組ガイド情報表示装置を提供することを目的とする。

【０００９】この発明は、受信した電子番組ガイド情報のうち、視聴契約が行なわれているチャンネルに対する電子番組ガイド情報のみを表示させることができるようになる電子番組ガイド情報表示装置を提供することを目的とする。

【００１０】この発明は、受信した電子番組ガイド情報のうち、現在時刻において番組が放送されておりかつ視聴契約が行なわれているチャンネルに対する電子番組ガイド情報のみを表示させることができるようになる電子番組ガイド情報表示装置を提供することを目的とする。

【００１１】

【課題を解決するための手段】この発明による第１の電子番組ガイド情報表示装置は、電子番組ガイド情報を受信し、受信した電子番組ガイド情報を表示する電子番組ガイド情報表示装置において、受信した電子番組ガイド情報に含まれる各チャンネル毎に、当該チャンネルの放送が受信可能であるか否かを判定する判定手段、および電子番組ガイド情報を表示する際に、受信不可能であると判定されたチャンネルに関する電子番組ガイド情報が削除された電子番組ガイド情報を表示させる表示手段を備えていることを特徴とする。

【００１２】この発明による第２の電子番組ガイド情報表示装置は、電子番組ガイド情報を受信し、受信した電子番組ガイド情報を表示する電子番組ガイド情報表示装置において、所定時間間隔毎に、受信した電子番組ガイド情報に含まれるチャンネルのうちから、現在時刻において番組が放送されているチャンネルのみを抽出する抽出手段、抽出手段によって抽出された各チャンネル毎に、当該チャンネルの放送が受信可能であるか否かを判定する判定手段、および電子番組ガイド情報を表示する際に、抽出手段によって抽出されているチャンネルに関する電子番組ガイド情報から、判定手段によって受信不可能であると判定されたチャンネルに関する電子番組ガイド情報が削除された電子番組ガイド情報を表示させる表示手段を備えていることを特徴とする電子番組ガイド情報表示装置。

【００１３】判定手段としては、たとえば、所定時間間隔毎に、各チャンネル毎にチューニングを行なって受信レベルを検出する手段、および検出した受信レベルに基づいて、各チャンネル毎に当該チャンネルの放送が受信可能であるか否かを判定する手段を備えているものが用いられる。

【００１４】判定手段としては、たとえば、予め記憶装置に記憶されている、電子番組ガイド情報表示装置の設置地域において受信可能なチャンネルを表す情報に基づいて、各チャンネル毎に当該チャンネルの放送が受信可能であるか否かを判定するものが用いられる。

【００１５】テレビ番組を構成するプログラムがインターネットによって伝送されてくる場合には、判定手段としては、たとえば、各チャンネル毎に対応するＵＲＬにアクセスして、プログラムの通信速度を検出する手段、および検出した通信速度に基づいて、各チャンネル毎に当該チャンネルの放送が受信可能であるか否かを判定する手段を備えているが用いられる。

【００１６】この発明による第３の電子番組ガイド情報表示装置は、電子番組ガイド情報を受信し、受信した電子番組ガイド情報を表示する電子番組ガイド情報表示装置において、視聴契約が行なわれているチャンネルを記憶する記憶手段、および電子番組ガイド情報を表示する際に、視聴契約が行なわれていないチャンネルに関する電子番組ガイド情報が削除された電子番組ガイド情報を表示させる表示手段を備えていることを特徴とする電子番組ガイド情報表示装置。

【００１７】この発明による第４の電子番組ガイド情報表示装置は、電子番組ガイド情報を受信し、受信した電子番組ガイド情報を表示する電子番組ガイド情報表示装置において、視聴契約が行なわれているチャンネルを記憶する記憶手段、所定時間間隔毎に、受信した電子番組ガイド情報に含まれるチャンネルのうちから、現在時刻において番組が放送されているチャンネルのみを抽出する抽出手段、電子番組ガイド情報を表示する際に、抽出手段によって抽出されたチャンネルに関する電子番組ガイド情報から、視聴契約が行なわれていないチャンネルに関する電子番組ガイド情報が削除された電子番組ガイド情報を表示させる表示手段を備えていることを特徴とする。

【００１８】

【発明の実施の形態】以下、図面を参照して、この発明の実施の形態について説明する。

【００１９】図１は、電子番組ガイド情報表示装置の構成を示している。電子番組ガイド情報抽出部１は、衛星テレビジョン放送、ケーブルテレビジョン放送、インターネット、携帯電話回線等から到来する電子番組ガイド情報を受信し、受信した電子番組ガイド情報から、日付、チャンネル番号、番組放送開始時間、番組放送終了時間等の電子番組ガイド情報を抽出して第１情報蓄積部２へ蓄積する。

【００２０】尚、衛星テレビジョン放送やケーブルテレビジョン放送から電子番組ガイド情報を受信する場合は、図１に破線Ａで示すように、受信回路部３によって受信した電子番組ガイド情報が電子番組ガイド情報抽出部１に送られる。一方、インターネットや携帯電話回線より電子番組ガイド情報を受信する場合は、破線Ａの経路に代えて、破線Ｂの経路で、電子番組ガイド情報が電子番組ガイド情報抽出部１に送られる。

【００２１】図２は、第１情報蓄積部２に蓄積された情報の一例を示している。図２に示すように、電子番組ガイド情報抽出部１で抽出された電子番組ガイド情報は、第１情報蓄積部２に、１次元の番組情報管理テーブルとして蓄積されている。然し乍ら、電子番組ガイド情報のデータ形式はこれに限られるものでなく、縦軸を時間、横軸を放送チャンネルとした、二次元テーブル等、種々の形態が考えられる。

【００２２】番組情報解析部４は、第１情報蓄積部２に蓄積された電子番組ガイド情報をタイマー部５の出力する現在時刻情報を参照して解析し、現時の時刻において番組が放送されている放送局のチャンネル情報を第２情報蓄積部６へ蓄積する。

【００２３】図３は、第２情報蓄積部６に蓄積された情報の一例を示している。図３に示すように、番組情報解析部４で解析及び出力されたチャンネル情報は、第２情報蓄積部６に、１次元のチャンネル情報管理テーブルとして蓄積されている。然し乍ら、チャンネル情報のデータ形式はこれに限られるものではない。

【００２４】尚、図１においては、第１情報蓄積部２及び第２情報蓄積部６は別々のブロックとして描かれているが、１つの半導体メモリで構成しても良い。また、半導体メモリに限らず、フレキシブルディスクや光磁気記録ディスクなどの媒体を利用しても良い。また、電子番組ガイド情報をインターネットなどのネットワークを利用して取得するような場合には、第１情報蓄積部２、第２情報蓄積部６をネットワーク上で共有されている記憶媒体によって構成することもできる。

【００２５】受信可能チャンネル判定部７は、第２情報蓄積部６に蓄積されたチャンネルそれぞれに対する、受信レベル検出部８における受信レベル検出結果に基づいて、各チャンネルの放送が受信可能であるか否かを判定する。受信可能チャンネル判定部７の詳細な説明については後述する。

【００２６】電子番組ガイド表示部９は、第２情報蓄積部６に蓄積されたチャンネルのうち受信可能チャンネル判定部７よって受信可能と判定されたチャンネルに対する電子番組ガイド情報を表示する。電子番組ガイド表示部９は、電子番組ガイド情報を例えば図４のようにレイアウトしてテレビ画面等に表示する。

【００２７】図５は電子番組ガイド情報抽出部１による電子番組ガイド情報抽出処理手順を示している。

【００２８】電子番組ガイド情報抽出は、例えば、所定時間間隔ごとに行なわれる。電子番組ガイド情報抽出部１は、衛星テレビジョン放送、ケーブルテレビジョン放送、インターネット、携帯電話回線等より到来する電子番組ガイド情報を受信する（Ｓ１）。受信した電子番組ガイド情報から、番組名、日付、放送局名、チャンネル番号、番組放送開始時間、番組放送終了時間等の電子番組ガイド情報を抽出する（Ｓ２）。抽出した電子番組ガイド情報を第１情報蓄積部２に格納する（Ｓ３）。これによって、図２に示すような番組情報管理テーブルが生成される。

【００２９】図６は、番組情報解析部４による番組情報解析処理手順を示している。

【００３０】番組情報解析処理は、所定時間間隔ごとに実行される。先ず、タイマー部５より現在時刻情報を取得し（Ｓ１１）、現在時刻情報を参照して、第１情報蓄積部２に格納された番組情報管理テーブルの中から、現在の時刻において番組を放送している放送局のチャンネル情報を取得する（Ｓ１２）。

【００３１】ここで、あるチャンネルが現在時刻において放送を行っているか否かを判断するには、そのチャンネルに対応する全ての電子番組ガイド情報より番組開始・終了時刻をチェックすることにより行なわれる。

【００３２】例えば、現在時刻が深夜の１時の場合に、チャンネル２において放送を行っているかどうかの判定は、チャンネル２の全ての電子番組ガイド情報より番組の番組開始・終了時刻をチェックし、番組開始・終了時刻が現在時刻（即ち深夜１時）に重なる番組が存在するか否かを判定することによって行なわれる。

【００３３】現在時刻において放送が行われているチャンネルのチャンネル情報を、第２情報蓄積部６に格納する（Ｓ１３）。これによって、図３に示すようなチャンネル情報管理テーブルが生成される。図３では、現在時刻において放送が行われているチャンネルが、チャンネル２、４、６、８、１０、３４、ＢＳ９である例を示している。

【００３４】図７は、受信可能チャンネル判定部７による受信可能チャンネル判定処理手順を示している。

【００３５】受信可能チャンネル判定処理は、番組情報解析処理が終了するごとに実行される。まず、第２情報蓄積部６に蓄積されたチャンネル情報管理テーブルよりチャンネル情報を取得する（Ｓ２１）。そして、取得し

たチャンネル情報の１つ１つについて、実際に受信可能かどうかをチェックする。

【００３６】つまり、取得した各チャンネル情報毎に受信回路部３をそのチャンネルに同調させ（Ｓ２３）、受信レベルを受信レベル検出部８より取得し（Ｓ２４）、受信レベルが視聴を行なうための適正レベル以上か否かを判定する（Ｓ２５）。受信レベルが適正レベルに達していない場合には、チャンネル情報管理テーブルから当該チャンネル情報を削除する（Ｓ２６）。

【００３７】例えば、チャンネル番号４、３４、ＢＳ９に対する受信レベルが適正レベルに達していないと判定されれば、チャンネル情報管理テーブルよりこれらのチャンネル情報が削除される。そして、チャンネル情報管理テーブル内に蓄積されたすべてのチャンネル情報に対して受信レベルのチェックが終わる（Ｓ２２でＹＥＳ）、今回の受信可能チャンネル判定処理が終了する。この結果、受信レベルが適正レベル以上であると判定されたチャンネルのチャンネル情報のみがチャンネル情報管理テーブルに残ることになる。

【００３８】図８は電子番組ガイド表示部９による電子番組ガイド表示処理手順を示している。電子番組ガイド表示処理は、ユーザからの電子番組ガイド表示指令が入力される毎に行なわれる。

【００３９】まず、第２情報蓄積部６内のチャンネル情報管理テーブルから受信可能なチャンネル情報を読み出し（Ｓ３１）、読み出したチャンネル情報に対応する電子番組ガイド情報のみを第１情報蓄積部２内の番組情報管理テーブルから読み出す（Ｓ３２）。そして、読み出した電子番組ガイド情報を放送時間順に並べ変えた後（Ｓ３３）、例えば図４に示すような形態で、電子番組ガイド情報をテレビ画面等に表示する（Ｓ３４）。

【００４０】上記実施の形態によれば、受信した電子番組ガイド情報のうち、現在時刻において番組が放送されておりかつ受信可能なチャンネルに対する電子番組ガイド情報のみを表示させることができるようになる。

【００４１】上記実施の形態では、受信した電子番組ガイド情報のうち、現在時刻において番組が放送されておりかつ受信可能なチャンネルに対する電子番組ガイド情報のみを表示させているが、受信した電子番組ガイド情報のうち、受信可能なチャンネルに対する電子番組ガイド情報のみを表示させるようにしてもよい。この場合には、番組情報解析部４とこれに連なるタイマー部５は不要であり、第１情報蓄積部２に格納された電子番組ガイド情報に含まれている各チャンネル毎に当該チャンネルの放送が受信可能であるか否かが受信可能チャンネル判定部７によって判定されることになる。

【００４２】なお、受信可能なチャンネルであるか否かの判定は、次のようにして行なってもよい。

【００４３】つまり、図９に示すように、地域別に受信可能なチャンネル情報を不揮発性メモリからなる地域別受信可能チャンネル記憶メモリ１１に予め記憶させておく。そして、電子番組ガイド情報表示装置が設置されたときに、電子番組ガイド情報表示装置が設置された地域の情報をユーザに入力させることによって、メモリ１１内の情報に基づいて当該地域で受信可能なチャンネル情報を特定できるようにしておく。この特定された受信可能なチャンネル情報に基づいて、受信可能なチャンネルであるか否かを判定する。

【００４４】テレビ番組を構成するプログラム（映像・音声データ）がインターネットによって伝送されてくる場合には、受信可能なチャンネルであるか否かを次のようにして判定することができる。つまり、受信可能か否かを判定すべきチャンネルに対応するＵＲＬにアクセスし、プログラム供給元からの通信速度を調べる。たとえば、通信速度が５００Ｋｂｐｓ以下であれば当該チャンネルの放送が受信不可能と判定する。

【００４５】上記実施の形態では、第２情報蓄積部６に蓄積されたチャンネル情報管理テーブル内のチャンネル情報のうちから、受信不可能なチャンネルの情報を削除しているようにしているが、図１０に示すように、ユーザが視聴契約をしているチャンネルを不揮発性メモリからなる契約情報記憶メモリ１２に登録しておくとともに契約チャンネル判定部１３を設けておき、第２情報蓄積部６に蓄積されたチャンネル情報管理テーブル内のチャンネル情報のうちから、ユーザが視聴契約をしていないチャンネルを削除するようにしてもよい。

【００４６】このようにすると、受信した電子番組ガイド情報のうち、現在時刻において番組が放送されておりかつ視聴契約が行なわれているチャンネルに対する電子番組ガイド情報のみを表示させることができるようになる。

【００４７】受信した電子番組ガイド情報のうち、視聴契約が行なわれているチャンネルに対する電子番組ガイド情報のみを表示させるようにしてもよい。この場合には、番組情報解析部４は不要であり、第１情報蓄積部２に格納された電子番組ガイド情報に含まれているチャンネルのうち、視聴契約が行なわれているチャンネルに対する電子番組ガイド情報のみが表示される。

【００４８】

【発明の効果】この発明によれば、受信した電子番組ガイド情報のうち、受信可能なチャンネルに対する電子番組ガイド情報のみを表示させることができるようになる。

【００４９】この発明によれば、受信した電子番組ガイド情報のうち、現在時刻において番組が放送されておりかつ受信可能なチャンネルに対する電子番組ガイド情報のみを表示させることができるようになる。

【００５０】この発明によれば、受信した電子番組ガイド情報のうち、視聴契約が行なわれているチャンネルに対する電子番組ガイド情報のみを表示させることができ

るようになる。

【００５１】この発明によれば、受信した電子番組ガイド情報のうち、現在時刻において番組が放送されておりかつ視聴契約が行なわれているチャンネルに対する電子番組ガイド情報のみを表示させることができるようになる。

【図面の簡単な説明】

【図１】電子番組ガイド情報表示装置の構成を示す概略ブロック図である。

【図２】番組情報管理テーブルの一例を示す図である。

【図３】チャンネル情報管理テーブルの一例を示す図である。

【図４】電子番組ガイドの表示の一例を示す図である

【図５】電子番組ガイド情報抽出部による電子番組ガイド情報抽出処理手順を示すフローチャートである。

【図６】番組情報解析部による番組情報解析処理手順を示すフローチャートである。

【図７】受信可能チャンネル判定部による受信可能チャンネル判定処理手順を示すフローチャートである。

＊【図８】電子番組ガイド表示部による電子番組ガイド表示処理手順を示すフローチャートである。

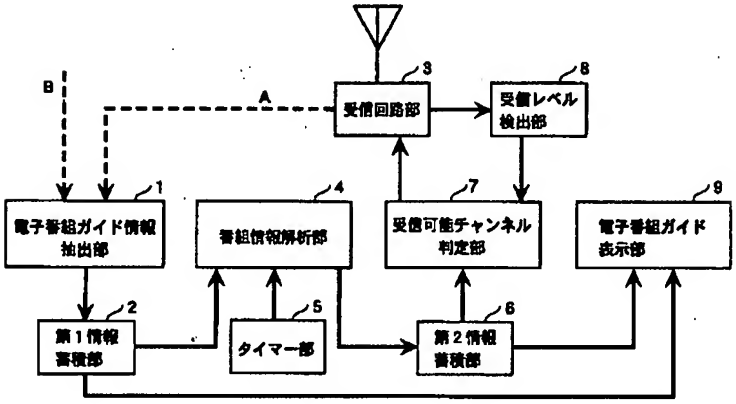
【図９】他の電子番組ガイド情報表示装置の構成を示す概略ブロック図である。

【図１０】さらに他の電子番組ガイド情報表示装置の構成を示す概略ブロック図である。

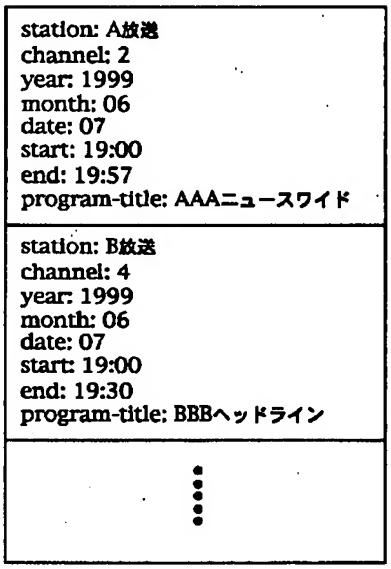
【符号の説明】

1　電子番組ガイド情報抽出部
2　第１情報蓄積部
3　受信回路部
4　番組情報解析部
5　タイマー部
6　第２情報蓄積部
7　受信可能チャンネル判定部
8　受信レベル検出部
9　電子番組ガイド表示部
１１　地域別受信可能チャンネル記憶メモリ
１２　契約情報記憶メモリ

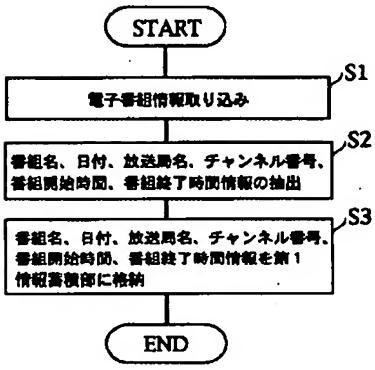
【図１】



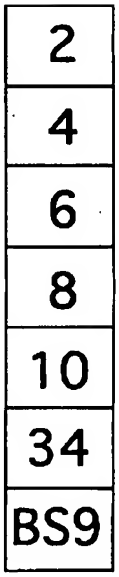
【図２】



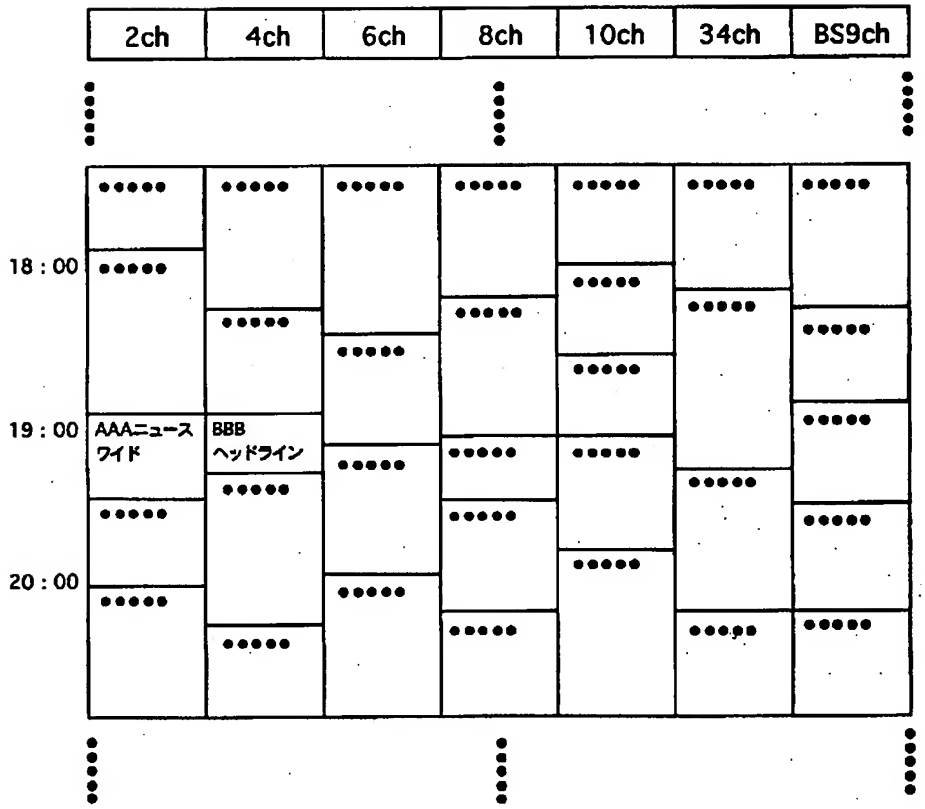
【図５】



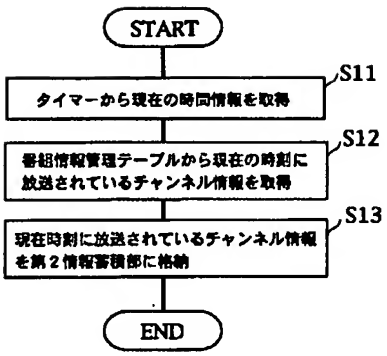
【図３】


2
4
6
8
10
34
BS9

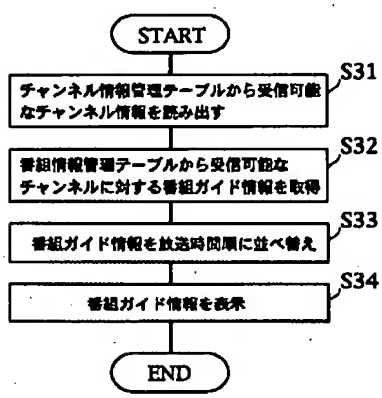
【図４】


2ch
4ch
6ch
8ch
10ch
34ch
BS9ch
18：00
19：00
20：00
AAAニュース
ワイド
BBB
ヘッドライン

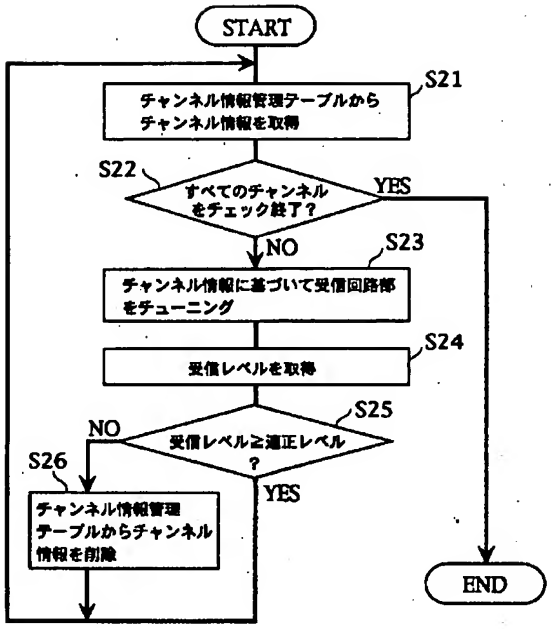
【図６】


START
タイマーから現在の時間情報を取得
S11
番組情報管理テーブルから現在の時刻に放送されているチャンネル情報を取得
S12
現在時刻に放送されているチャンネル情報を第２情報蓄積部に格納
S13
END

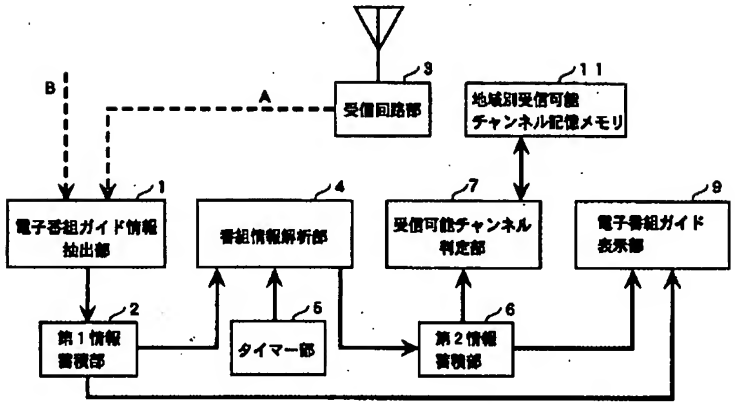
【図８】


START
チャンネル情報管理テーブルから受信可能なチャンネル情報を読み出す
S31
番組情報管理テーブルから受信可能なチャンネルに対する番組ガイド情報を取得
S32
番組ガイド情報を放送時間順に並べ替え
S33
番組ガイド情報を表示
S34
END

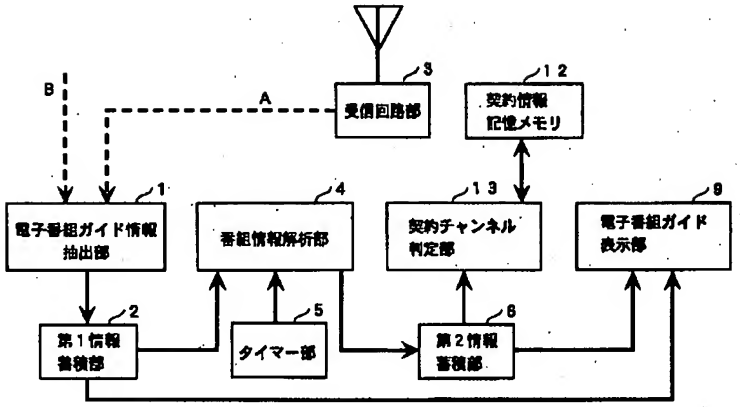
【図７】


START
チャンネル情報管理テーブルから
チャンネル情報を取得
S21
S22
すべてのチャンネル
をチェック終了？
YES
NO
S23
チャンネル情報に基づいて受信回路部
をチューニング
S24
受信レベルを取得
S25
NO
受信レベル≧適正レベル
？
S26
YES
チャンネル情報管理
テーブルからチャンネル
情報を削除
END

【図９】


B
A
3
受信回路部
11
地域別受信可能
チャンネル記憶メモリ
1
電子番組ガイド情報
抽出部
4
番組情報解析部
7
受信可能チャンネル
判定部
9
電子番組ガイド
表示部
2
第１情報
蓄積部
5
タイマー部
6
第２情報
蓄積部

【図１０】


B
A
3
受信回路部
12
契約情報
記憶メモリ
1
電子番組ガイド情報
抽出部
4
番組情報解析部
13
契約チャンネル
判定部
9
電子番組ガイド
表示部
2
第１情報
蓄積部
5
タイマー部
6
第２情報
蓄積部